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Heidi A. Boehlefeld Renner, Otto, Boisselle & Sklar, LLP Nineteenth Floor 1621 Euclid Avenue Cleveland, OH 44115-2191				
EXAMINER				
GILLESPIE, BENJAMIN				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/797,826

**Applicant(s)**

HUYNH, DIEU DAI

**Examiner**

BENJAMIN J. GILLESPIE

**Art Unit**

1796

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 February 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 7-10, 12 and 13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7-10, 12 and 13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S508)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term “substantially” renders claim 10 indefinite because “substantially” is relative language.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 7-8, 10, 12-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Reischl et al ('095). Reischl et al teach an aqueous dispersion comprising (A) polyether and (B) polyester based polyurethane resin, wherein each resin is the reaction product of polyol and aliphatic diisocyanate (Abstract; col 2 lines 3-6, and 27). In particular (A) is based on polyethylene oxide, which commonly known in the art to be hydrophilic; (B) contains salt groups, which render said polyester water-dispersible, and both (A) and (B) are dispersed in the absence of solvent in amounts that correspond to applicants' claimed amounts (Col 1 lines 24-50; col 5 lines 47-62). Reischl et al explain the separate resins result in a final polyurethane that exhibits improved dispersion stability and the ability to re-disperse quickly if the resin settles (Col 1 lines 10-23). Although patentees do not explicitly teach the polyurethane useful in image

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transfer layers, based on a composition that is analogous claims, the position is taken that the polyurethane of Reischl et al would inherently perform as a dye transfer layer.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 7-8, 10, and 12-13 rejected under 35 U.S.C. 103(a) as being unpatentable over Ramello et al ('972) and Otto Bayer et al ('310) in view of Reischl et al ('095). Ramello et al disclose a dye transfer coating composition comprising water dispersible polyurethane resin, and multifunctional cross-linking agent (Col 3 lines 45-46, 50-52, 64-66; col 4 lines 60-65; col 7 lines 64-67). In particular, patentees explain that the polyurethane resin is based on compounds such as those listed in U.S. Patent 3,479,310 (Bayer Otto et al), which are the reaction product of linear polyether polyol, polyester polyol, and aliphatic diisocyanate compounds (Otto Bayer; col 2 lines 55-62; col 3 lines 36-39). However, patentees fail to explicitly teach separate polyether and polyester based polyurethane resins in amounts that correspond to applicant's claims.
4. Reischl et al also teach water-dispersible polyurethane resin comprising the reaction product of polyether and polyester polyol, and aliphatic diisocyanate (Abstract; col 2 line 27). In particular, patentees explain that the polyurethane is preferably synthesized by mixing separate salt-free polyether based polyurethane resin, and salt-containing polyester based polyurethane resin in amounts that correspond to applicant's claimed amounts (Col 1 lines 24-50). Reischl et al explain the separate resins result in a final polyurethane that exhibits improved dispersion

stability and the ability to re-disperse quickly if the resin settles (Col 1 lines 10-23). Therefore, it would have been obvious to separate the polyether and polyester resins of Ramello et al in their corresponding amounts to obtain a final polyurethane that exhibits enhanced dispersion properties.

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ramello et al ('972) and Otto Bayer et al ('310) in view of Reischl et al ('972) in further view of Rhoades et al ('824). Aforementioned, Ramello et al in view of Reischl et al renders obvious an aqueous dye receiving coating composition containing both polyester and polyether based polyurethane, and multifunctional cross-linking compound that consists of ethylene diamine, and diethylenetriamine, but fail to teach polyfunctional aziridine (Col 7 lines 64-67; col 8 lines 1-2).

6. Rhoades et al teach a water dispersible polyurethane composition useful in receiving aqueous dye coatings, wherein the polyurethane is the reaction product of an isocyanate-terminated prepolymer and multi-functional cross-linker (Abstract; col 6 lines 56-62). In particular, patentees disclose chain extenders consisting of compounds such as ethylene diamine, diethylene triamine, and polyaziridine, wherein the polyaziridine provides superior intra-molecular cross-linking, which provides improved solvent resistance for the cured coating (Col 7 lines 6-7, 36-38, and 51-52). Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to include polyaziridine as the cross-linking agent in Ramello et al based on motivation that both compositions are water-dispersible polyurethanes that are in contact with dye compositions and polyaziridine improves the performance properties of the resulting cured coating.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reischl et al ('972) in view of Rhoades et al ('824). Aforementioned, Reischl et al teach water-dispersible polyurethane that consists of polyether and polyester based resins and multi-functional chain extender; however patentees are silent in teaching chain extender that consists of polyaziridine (Col 1 lines 36-38).

8. Aforementioned, Rhoades et al teach a water dispersible polyurethane composition based on polyester and polyether backbones. Patentees go on to disclose that said resin is preferably chain extended with polyaziridine because it results in a polymer that has superior intra-molecular cross-linking, thereby improving solvent resistance for the cured coating (Col 7 lines 6-7, 36-38, and 51-52). Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to include polyaziridine as the cross-linking agent in Reischl et al based on motivation that both compositions are water-dispersible polyurethanes and polyaziridine improves the performance properties of the resulting cured coating.

***Response to Arguments***

9. Applicant's arguments, filed 2/21/2008 with respect to the rejection of claimed invention over 112 2<sup>nd</sup> paragraph and the prior art under 35 U.S.C. 102(b) and 103(a) have been fully considered but they are not persuasive. Specifically, applicants argue the rejections of:

- a. Claim 10 under 35 U.S.C. 112, second paragraph,
- b. Claims 7-8, 10, 12-13 as being anticipated by Reischl et al ('095),
- c. Claims 7-8, 10, and 12-13 as being unpatentable over Ramello et al ('972) and Otto Bayer et al ('310) in view of Reischl et al ('095),

- d. Claim 9 as being unpatentable over Ramello et al ('972) and Otto Bayer et al ('310) in view of Reischl et al ('972) in further view of Rhoades et al ('824), and
- e. Claim 9 as being unpatentable over Reischl et al ('972) in view of Rhoades et al ('824).

10. Regarding issue a, applicants argue that the language "substantially free" is commonly understood in the art, and while the examiner acknowledges the language "substantially" is commonly used, it is important to note that said language is understood when a relative basis is set forth as exemplified by *Verve LLC, v. Crane Cams, Inc.*, 65 USPQ 2d 1051 (Fed. Cir. 2002). *Verve LLC, v. Crane Cams, Inc.* is drawn to the clarification of a close approximation of an already defined limitation, i.e. uniform thickness, and while applicants assert the language "substantially free" is intended to "mean that that minors amounts of an organic solvent may be present so long as the solvent does not affect the aqueous dispersion," this definition is not reflected in the claims or specification; therefore the examiner maintains the rejection under 35 U.S.C. 112 2nd paragraph.

11. Regarding issue b, applicants argue that Reischl et al fail to teach an aqueous dispersion of water dispersible polyether and polyester based polyurethane resin in the absence of solvent; the examiner disagrees. It is noted that on column 5 lines 47-54 Reischl et al teach resin (B) added to resin (A) in the presence of solvent and before salt modification, however lines 55-59 explain that the polyester is then rendered hydrophilic by introducing salt groups, the resins are dispersed in water, and the solvent is removed from the system, i.e. an aqueous dispersion of both polyester and polyether based polyurethanes in the absence of solvent. Moreover, patentees

teach that (A) and (B) may be further cross-linked in the aqueous phase through the addition of external cross-linking agents; based on this teaching it is the examiner's position that both (A) and (B) satisfy the "resin" limitation of claim 7 (Col 6 lines 15-23; col 7 lines 12-17).

12. Applicants also argue issue **c**, stating that the prior art does not render obvious the claimed invention because one would not be motivated to combine the teachings of Reischl et al with Ramello et al, again the examiner disagrees. The determination that a reference is from a nonanalogous art is twofold. First it is decided if the reference is within the field of the inventor's endeavor, and if it is not, then it must be determined whether the reference is reasonably pertinent to the particular problem with which the inventor was involved. *In re Wood*, 202 USPQ 171, 174; *In re Clay*, 23 USPQ.2d 1058.

13. While it is noted that Reischl et al do not explicitly teach applications in thermal dye transfer receptor layers, the test for analogous prior art is satisfied by the fact that both Reischl et al and Ramello et al are drawn to aqueous dispersions of polyurethane resins cured in the aqueous phase, and one would be motivated to utilize the disclosure of Reischl et al because it leads to an enhanced polyurethane resin dispersion (Reischl et al, abstract, col 7 lines 12-17; Ramello et al, abstract, col 7 lines 56-67).

14. Applicants' remarks concerning issues **d** and **e**, have been rendered moot in view of paragraphs 11-13, specifically the teachings of Rhoades et al are not relied upon for the ratio of polyether:polyester based polyurethane resin as asserted by applicants.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).



A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin J. Gillespie whose telephone number is 571-272-2472. The examiner can normally be reached on 8am-5:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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B. Gillespie

/James J. Seidleck/

Supervisory Patent Examiner, Art Unit 1796